ROBERT F. KRIZ
Colonel, U.S.A.R., Ret.

1710 Richardson Road
Merritt Island, Florida 32952
305-452-8018

NUMISMATIST
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ANS
ANA LM 587
CNA LM 114
OIN 811
FRNS
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Member Assay
Commission, 1972

17 Junee 1974

Mr. N. Neil Harris
Editor, The Numismatist
American Numismatic Association
P. O. Box 2366
Colorado Springs, Col 80901

Dear Neil:

I am completely astounded by the article on p. 1074 of the June issue of THE NUMISMATIST on "Winning A Battle in the War Against Cast Copies", which issue I received Saturday last.

Not only is the article almost entirely erroneous, it may cause some ANA members and others to purchase coins they really should not purchase.

It is obvious you did not run the article by the one master in the area of counterfeit detection - Virgil Hancock-, who has put on the Summer Seminar Counterfeit Detection Courses for 5 years - Seminars 1 through 5- or his journeymen, John Hunter of East Detroit, Michigan, and myself.

I believe it is mandatory on you and the ANA to bring to the attention of all readers of THE NUMISMATIST the errot of the article. I recommend a correcting and corrective article be authored by some knowledgeable numismatist and published ASAP - as soon as possible -, perhaps even a June and ½ issue, before the July issue gets locked up and out!

Yours in the protection and furtherance of our great and wonderful hobby, and let's all make it a better hobby,

Sincerely,

Bob

cc: Executive Director

JUN 21 1974

For July '74 issue THE NUMISMATIST . . .

(Featuring Fakes . . . 1)

As this is being written, now 11:10 PM. on the night of Wednesday, June 12, I've just hung up the 'phone from my third long-distance call tonight — folks kidding me and reading to me the gist of an article which, I'm told, appears in the June '74 The Numismatist, even though the article is loaded with a large order of misinformation.

(Not until each 15th does my copy of the magazine show up, and thus I'm writing now from notes I've just made as to the contents of the unfortunate article, "Die Stress Detection: Winning A Battle in The War Against Cast Copies," authored by my friend Hal Birt, Jr., and Dick Wagner.)

If my notes accurately reflect what Authors Birt and Wagner really wrote, then they mistakenly have written:

> "A 16-X hand lens is the most reliable and widely used method among numismatists to sort die-struck specimens from cast copies."

Folks, don't believe a word of that!!!!!!

The authors were in gross error . . . they've unthinkingly given very, very bum advice . . . when they wrote that a 16-X hand held lens is the most reliable method for detection of a cast coin, and their error can cost a lot of readers some hard-earned cash!

As told to me over the 'phone, the authors also mistakenly wrote:

> "No cast coin has ever shown signs of die stress."

At first I thought I was hearing a satire on counterfeit detection, but my callers insisted that the article was written seriously.

subhead

AND MORE HOGWASH !!!

Further, they wrote:

> "When die stress is present on a coin, no matter its textural appearance, the coin is not cast."

(By "die stress" the authors no doubt mean the flow-lines caused when the moving metal flows beneath the ~~unpolished~~ not highly polished, hardened steel die during the striking operation. Flow-lines fan out from the center, more prominent as the rim is neared. Also they're seen as the metal of the blank has flowed up into the recesses of the die which form the letters, numerals, and raised portions of the coin.)

subhead

THERE'D BE DANCING IN THE STREETS

If everyone followed the advice of these two gentlemen, as they say, "The burden on Charles Hoskins and ANACS would be eased!"

In fact, if everyone followed their advice, ANACS' burden would be so eased that we could close up ANACS, sell all the testing equipment, and the ANACS staff could retire . . . and all the counterfeiters in this world would be dancing in the streets, their joy be unconfined!

subhead

SEEING IS BELIEVING

Folks, I have watched counterfeit coins being cast. And those fakes most certainly DID have flow-lines (or, as those authors call 'em, "die stress").

In December '73 I attended a seminar on casting at Richland College in Dallas, where I saw the latest casting techniques demonstrated.

On the last afternoon of the seminar, ~~I, myself,~~ with my own hands, I made a mold of a genuine ~~Mexico~~ Mexican "pillar dollar." That mold not only had flow-lines ("die stress"), but also had an extremely sharp PLUS VLTRA, those ~~so~~ very tiny letters incused into the ribbons adorning the pillars.

Folks, when you see a mold made from powdered steel under heat and extreme pressure, and when the molten silver is rammed into that mold under ten thousand pounds pressure, you can bet your bottom peso that the cast counterfeit coin will have flow-lines if the genuine coin, which was used as the pattern, had flow-lines.

And when you see an automatic casting machine which can cast 27 coins an hour, then, folks, you'd better arm yourself with a top quality 30-X Nikon SM-5 or zoom stereoscopic microscope . . . and learn how to use it!

Subhead

$3 GOLD PIECES AT $100.00 !

When a lad, touring the USA selling gold coins, sovereigns and USA, to a few dealers, can sell USA $3 gold pieces in lots of 100 pieces, at $100 a coin, even though they have flow-lines, you can bet your new Mercedes that the things are counterfeit. And they ARE cast! (The Houston office of the U.S. Secret Service confiscated one this very morning, in a town just a few miles from Bellaire.)

The U.S. Mint Laboratory has examined and catalogued thousands of cast counterfeit gold coins which have been confiscated by the Secret Service. And you'll find flow-lines on many of them. So don't anyone tell me that cast coins don't have flow-lines ("die stress")!!!

Subhead

DON'T YOU BELIEVE IT !

In another part of that article, as read to me tonight over Alex G. Bell's wonderful invention, the authors say:

> "If evidence of die stress exists on a coin, the piece is not a cast coin."

Don't you believe it!

In fairness to the authors of all that misinformation, I suspect their experience with cast coins has been with coins cast with "French sand" which was in use fifty and more years ago. Counterfeiters don't use that any more.

The Southeast Asian sharpies will jump with joy when they see that article in the June The Numismatist, and I'll be surprised if that article isn't introduced by some defendant counterfeiter in some future trial in a federal court.

It's unfortunate that it was written, unfortunate that it saw the printed page.

And I stand by that statement!

# # #

ODD CORNER

As Appearing in NUMISMATIC NEWS WEEKLY

Alan Herbert • Box C • Deadwood, S.D. 57732
Phone (605) 578-3821 ANA R-67555

Please mention this file number when replying

OCL— XXXXXX 7379 6/20/74

N. Neil Harris - Editor
The Numismatist
P.O. Box 2366
Colorado Springs, CO 80901

Dear Mr. Harris:

I've just had an opportunity to read the "Die Stress Detection" article in the June issue, and I am aghast that this kind of misinformation could get into print, on at least two counts.

First, anyone who says he can detect the difference between counterfeit and genuine coins with a 16 power hand lens is a fool, or worse, or had a fool for an advisor. I know of no one, living or dead that could accomplish that miracle. If the authors claim this distinction, I would gladly send them a box full of mixed fake and genine mint errors, and bet them $10 a coin that they couldn't beat the law of averages, and with access to the proper sources I could safely make the same bet with a second box of date and mint coins.

The author's statement,"....involving microscopic examination using a 16 power hand lens....." is a gross misstatement of fact, giving to the hand lens the much higher qualifications of the simple microscope, let alone the stereo microscope that is really needed for comprehensive examination and detection of counterfeiting.

Secondly, the authors display a complete lack of comprehension of the minting process in describing the pictured markings as "die stress," since such a definition would mean that pressure, distortion, or other tension affecting the die is the cause of the markings on the coin, when in actuality the lines are the marks of flow of the coin metal itself, with the "tension" of the die purely secondary.

The fatal flaw underlying both these comments is that metal flow lines are just as readily counterfeited as any other fine detail of a coin - and requires equipment considerably more sophisticated than a normally shaky hand holding a lens of any power.

My"bet" is the over-reaction we are all guilty of, but my reasoning is not.

Sincerely,

JUN 24 1974

Also Featured in COINS Magazine and COIN PRICES

THE NUMISMATIST

Official Publication of
AMERICAN NUMISMATIC ASSOCIATION
N. NEIL HARRIS
Editor

P. O. BOX 2366, COLORADO SPRINGS, COLORADO 80901

June 20, 1974

Eric P. Newman
P.O. Box 14020
St. Louis, MO 63178

Dear Eric:

Enclosed you will find a copy of Virgil Hancock's article which will run in the August issue of THE NUMISMATIST.

Please let me know, at your earliest convenience, whether you are interested in writing a response to the Hancock-Birt/Wagner disagreement.

Since our August deadline is the 25th of this month, it is doubtful if you could get something to me that quickly. If you are interested in writing an article, it would probably appear in the September NUMISMATIST.

Looking forward to hearing from you in the near future.

Sincerely,

Neil

N. Neil Harris
Editor

NNH/pkf
enclosure

AMERICAN NUMISMATIC ASSOCIATION
Chartered by Congress
N. NEIL HARRIS
Editor
P. O. Box 2366, COLORADO SPRINGS, COLORADO 80901

June 26, 1974

Eric P. Newman
6450 Cecil Avenue
St. Louis, MO

Dear Eric:

Enclosed are the two letters I mentioned having received in response to the Hal Birt-Dick Wagner article. I thought you might want to take a look at them.

Sincerely,

Neil

Neil

NNH/pkf
enclosures - 2

WASHINGTON UNIVERSITY
ST. LOUIS, MISSOURI 63130

DEPARTMENT OF CHEMISTRY

July 17, 1974

Mr. N. Neil Harris
Editor, The Numismatist
P.O. Box 2366
Colorado Springs, Colorado 80901

Dear Mr. Harris,

I am writing in order to propose a referee system for articles submitted to the Numismatist for publication. Ever since I joined the ANA two years ago and began reading the Numismatist regularly, the need for screening by qualified experts of submitted articles has been apparent to me. That this need is urgent is indicated by the publication in the June 1974 Numismatist of the article by Birt and Wagner entitled: "Die Stress Detection: Winning a Battle in the War Against Cast Copies."

Because the thesis presented by Birt and Wagner that "No cast coin has ever shown signs of die stress" is erroneous, a great deal of mischief has been caused by the publication of their article. It is truly a shame that for some time to come this article will be read and its errors propagated, when anyone conversant with the techniques employed by contemporary forgers could and would have told Birt and Wagner that for several decades it has been possible to produce cast forgeries of coins such that the signs of die stress are faithfully transmitted from the original coin used to make a mold to the cast copies. Had an expert read this article before publication, the misconceptions of the authors could have been pointed out to them in private, without the embarassment which publication will have brought to them as well as to the Numismatist.

I propose that when an article is received by the editor of the Numismatist, that it be sent to a member of the ANA who is knowledgable in the area covered in the article and who is willing to provide in writing comments helpful both to the editor and the authors. If the comments are favorable the editor can immediately accept the article for publication. If the referee suggests additions, deletions or other changes, the editor can pass these comments anonymously (or signed if the referee so requests) back to the authors and request that the authors either make the suggested changes or respond by explaining why the changes should not be made. If the referee is very negative, and recommends against acceptance of the article, the editor can take the advice of the referee, accept the article in spite of the referee's comments, or send the article to a second referee. The editor would of course retain his full authority to make decisions concerning acceptance of articles for publication.

The system I suggest is widely used in American and English scientific journals, and the referee system has been credited with a major role in maintaining the high quality of the journals which employ it. The referee system has great advantages for all sides: authors, editors, and the readers of the journal. Since an editor cannot be knowledgable in all fields of numismatics, it provides a mechanism for the editor to receive expert advice. Such a system will help to prevent the publication of such unfortunate articles as that of Birt and Wagner by spreading the responsibility for deciding on the merit of an article among those in the best position to make such a determination. The morale of the whole ANA would benefit by involving more members directly in the publishing of the Numismatist. Authors will be assisted by having the comments of experts before publication, at a stage where improvements in articles can easily be made, and even whole new lines of attack on a problem can be undertaken, all without embarassment. By increasing the quality of the articles published, clearly the best interests of the readers are served. As the author of 40 refereed papers in the field of chemistry, as well as several unrefereed numismatic articles, I have come to know the referee system well and have benefitted from it both as author and reader.

A referee system has, of course, disadvantages as well as advantages. By adding another step to the publishing process it delays publication. It depends on the conscientiousness and fairness and objectivity of the referees, qualities which being human are not always perfect. Abuses are sometimes commited by referees with an animus against particular authors or with a vested interest in slowing down or stopping a particular publication. For the system to work, an editor must know who the experts are in a variety of subjects, and who will do the refereeing promptly and fairly. The establishment of a good working body of referees takes time. Surely however the ANA has sufficient qualified and willing experts. Having often served as a referee myself, I know the pride one takes in helping editors and authors, and the excitement in being privileged to be among the first to read an interesting new paper.

I am recommending this refereeing plan to you now becuase the publication of the Birt-Wagner article casts real doubt on the reliability of the Numismatist as a numismatic journal and on the ANA as an educational organization as provided in the charter from Congress. Blame for the mistakes published in the Birt-Wagner article rests with the system by which articles are screened for publication. Far from blaming Birt and Wagner, I commend them for doing original work in a terribly important field and for writing up their results in a clear, concise, interesting manner. They were let down by those of us who could have helped them, and would indeed have done so had a channel of communication existed. I believe that the ANA is obliged to establish such a channel of communication between author and expert by establishing a referee system for articles submitted to the Numismatist.

Neither you nor any other editor can be held responsible for the material he publishes. Every editor wants to print the best journal he can, but every editor of a technical journal needs help in evaluating manuscripts and in seeing that they are made as perfect as is possible. A referee system is essential as a means to this end.

Sincerely yours,

Peter Gaspar

Peter Gaspar
Professor of Chemistry

cc: Mr. Eric P. Newman

Hi, Eric -

The enclosed will be my last effort to alert ye trusting collector re Birt-Wagner bum advice.

As to the coming ANA election, I actually don't want the job of ANA prez, yet I see nobody else on the horizon foolhardy enough to want to try to unload some of the fossils who've hampered things which need being done. So I'm torn between my desire to see certain things accomplished and my desire to take it easy and stay away from the headaches. And I certainly don't need ANA for my social life, and any "prestige" won't buy a cuppa coffee without an accompanying quarter.

Nor do I really expect to defeat "the doctrine of orderly succession" for George is a most nice person, and nobody ever has said anything but good of him. I really wish I were running against almost anyone else. Hopefully I just may scare hell out of the ANA brass, though. Regards, Eric, and all the best!

Virgil

On June 13 I received my copy of the June 1975 issue of this magazine in which appeared an article titled "The Die Stress Controversy" by authors Hal Birt, Jr., and Dick Wagner, two really nice fellows.

Because May 25 was the deadline for material to appear in the July issue, my comment has had to wait two months until this August issue.

Let me collapse the Birt-Wagner nine pages into two short paragraphs. These are facts:

Bold

1. Whatever appears on a die-struck coin can be transferred to a mold. The transfer then always is a wee bit less sharp than the original.

2. Whatever then appears on the mold can be transferred to a cast coin. Again, the transfer then always is a wee bit less sharp than the mold.

"Flow lines" ("die-stress" or "stress marks" or "stress lines" or whatever you want to call them) and the legend and the coin's design always will lose a wee bit of sharpness in the double transfer from the die-struck coin to its counterfeit.

But often, unless you have the die-struck coin alongside its own counterfeit for comparison, only a very expert eye can detect what Henry Grunthal calls the "softness" of the transfer.

When under the striking pressure the metal flows up into the recesses of the die, and outward until it's stopped by the collar, a minutely rough texture of the die surface will score or rip into the flowing metal, and will leave what appear under magnification to be lines, "flow lines" or what Messrs. Birt and Wagner call "die-stress."

Writers Birt-Wagner decided to create a "yardstick" of 2,500 flow lines ("die-stress") to one inch as their requirement needed to convince themselves that flow lines can appear on a cast counterfeit.

Yet, in their previous article in the June 1974 issue, page 1074, they wrote, "Genuine coins exist without die-stress . . . " And I agree that is true.

But I do not agree . . . nor do some counterfeiters I have met . . . with the Messrs. Birt-Wagner next statement, "No cast coin has ever shown signs of die-stress . . . if evidence of die-stress exists on a coin, the piece is not a cast copy."

That is the dangerously misleading statement with which I took issue . . . and with which I still take most vigorous issue !

Folks, I don't want to beat that flow lines topic to death, but I'm fearful that, after he'll have waded through that June issue's Birt-Wagner article, some collector, even some dealer, will get stuck with a cast counterfeit because he can see flow lines flowing up the edges of the "teeth" ("denticles") of a coin's border.

Repeat, the mere sight of flow lines, et al, will NOT be proof that a coin is genuine, die-struck !

Subhead Bold

Imported in violation of the Hobby Protection Act

You see today four silver pieces currently being manufactured in Mexico.

It is illegal to import these into The USA . . . unless they will have been incused with COPY [redacted] in sans-serif capital letters measuring at least 2 millimeters vertically, and the word itself must cover at least 6 millimeters horizontally.

At the top of the page opposite is a concoction resembling the silver peso of Maximiliano, emperor of the Second Mexican Empire. And, at the bottom of that page, is the obverse of another concoction showing Maximiliano and his empress, Carlota. Both pieces have the same reverse.

At the top of this page is still another concoction of Maximiliano, with the same reverse. This piece, though, was struck with an obverse die showing only the words MAXIMILIANO EMPERADOR and the ribbon at 6:00 o'clock, the die otherwise blank. Then the extremely high relief bust of Max was soldered to the obverse, which could exempt this piece from the Hobby Protection Act.

And shown at the bottom of this page, struck at the same "mint" in Mexico, is a concoction of the First Mexican Empire's Agustin.

# \# \#

ERIC P. NEWMAN NUMISMATIC EDUCATION SOCIETY

6450 Cecil Avenue, St. Louis 5, Missouri

July 17, 1975

Mr. Virgil Hancock
Box 936
Bellaire, TX 77401

Dear Virgil:

By now I am sure you have read the blast taken at both of us by Messrs. Birt and Wagner. Neil Harris did not submit to me the article before it was published. I feel it was more of a personal attack against you and against me and it should have been more carefully edited.

The amazing thing to me is that they still feel that the stress lines end up on a die after it is used for a while. This to me is impossible and undermines their entire scientific approach.

I do not plan to answer the article.

Don't worry about winning or losing the election as politics is a wild game which I do not play.

My very kindest personal regards.

Sincerely,

Eric P. Newman

EPN:jah

Organization of International Numismatists

Section of the American Numismatic Association

Virgil Hancock, Past President
Box 936
Bellaire, TX 77401

Sunday afternoon,
June 8, '75

Good Afternoon, Eric -

Yesterday morn John Hunter 'phoned me, asking if I'd read the June issue "The Numismatist" . . . which I hadn't, since my copy doesn't reach Bellaire until about the 12th or 15th of each month . . . but John wouldn't tell me the "why" of his call, other than to say to read the article of several pages' length by Hal Birt and his ghostwriter Wagner.

Then, this morn, Joe Frantz also 'phoned . . . and, with him paying for the call, I didn't feel justified in asking him to read the article to me.

However, I gleaned that the article is a re-hash of the previous Birt-Wagner article to which you replied in the September '74 issue.

Of course, my guess may be wrong, and it may be an article about the new $1000 coin in 0.999999 fine gold, legal tender in the Whozis Islands, now distributed by the XYZ Coin Corporation.

Assuming my guess is correct, I'm just wondering, Eric, if Neil Harris submitted the article to you for comment before publishing same.

I'd've thought he'd ask your opinion before publishing, since you were a sort of innoncent bystander, free of any prejudice which Birt or Hancock might have.

So much on that topic.

As to my race for the ANA gavel, I fully expect George to beat the sox off me, for George is one swell fellow, and nobody ever has said anything but good of George, and the "doctrine of orderly succession" is almost bombproof.

And, if I lose, I certainly shall shed no tear. But, as you'll see from the enclosed 2-pager, I do hope I can start some thinking among the rank-and-file.

As always, Eric, with my cordial regards to you, I still sign off,

Sincerely,

Virgil

s

1909

Marillac, reported to his king that a goldsmith of Augsburg possessed the secret of imparting to coins regularity of weight and circularity of form. Henry lost no time in despatching to Augsburg the Master of the Lyons Mint and a brother of his ambassador with Aubin Olivier, a skilled mechanician, to act as their technical assistant and adviser.

After some secret negotiations, a set of the minting apparatus was purchased from the German jeweller, whose name was Marx Schwab, for the king, and one of the vendor's workmen accompanied the tools to Paris that they might be set up in proper working order.

According to Le Blanc,[15] Henry ordered the machines to be installed in a house of the baths situated in the grounds of the Palace, where, in January 1552,[16] proof coins were satisfactorily struck in his presence. In spite of strenuous opposition from the *Cour des Monnaies*, issues of the new coins were subsequently made, and the pieces are justly famous for their excellence of design and workmanship. They became known as mill-money (*Monnaie du Moulin*), from the circumstance that the necessary power for driving the machinery was in the first instance supplied by a mill formerly used by Matteo dal Nassaro, an Italian gem-engraver, under whom Béchot, the Graveur-général, had studied in his younger days. Dal Nassaro's mill, which was in existence in 1534, was known as the "Moulin de la Gourdaine," and seems to have been set up to polish precious stones.

W. J. Hocking

The machines for coining introduced from Germany on this occasion comprised the rolls (*laminoirs*) for reducing the cast plates or bars of metal to a suitable thickness; the draw benches (*bancs à tirer*), presumably for adjusting the thickness of the rolled fillet; the circular cutting-punches (*coupoirs*), for preparing the discs or flans of the required size and weight; the presses (*balanciers*), for striking the blanks with dies; and the appliances for holding the dies in position under the press (*tenailles*). The last-mentioned class may have included iron collars or rings for enclosing the blanks while they were being struck.

This machinery was placed under the direction of Aubin Olivier, who, in 1556, succeeded to the duties, though not to the office, of De Marillac, who had been made superintendent of the *Hôtel des Monnaies du Moulin* in 1552. The engraving of matrices and punches for the whole of the French mints was in the hands of the celebrated Parisian artist, Marc Béchot, who was appointed by Francis I to the new post of Graveur-général, created in 1517.[17] His designs excel in beauty of type, and were well reproduced by the mill process. In the newly established mint, Jean Erondelle and Etienne de Laune, probably under Béchot's direction, engraved the necessary dies. The former of these, within a short for 1568-9, it being unquestionable that the three chroniclers refer to the same event.

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[15] *Traité historique des Monnoyes de France*, 1792, p. 268. Boizard, in his *Traité des Monoyes*, Paris, 1714, says the coinage began in 1553 (p. 157), but Mazerolle gives 1552: see also the next note.

[16] Du Fresne, or Du Cange, as quoted by Ruding, vol. i. p. 342 (1840), gives January 27, 1550, as the date of the ordinance establishing the *Monnaie du Moulin*, and January 29, 1551, as the date of Henry II's edict for striking testons by the mill. These dates should probably read 1551 and 1552 respectively, full work having been commenced in the latter year. M. P. Lacombe has produced confirmatory evidence of the establishment of the *Monnaie du Moulin* in 1551 from *Les Chroniques de Jean Carion*, a work published in 1553. The passage is quoted in *Gazette numis. française*, 1904, p. 429.

[17] *Medallic Illustrations of British History*, by Hawkins, Franks, and Grueber, 1885, vol. ii. p. 720.

On the other hand, it is equally clear from the several references in the Privy Council Acts that Eloye or Elloye Mestrell was apprehended in 1577, nine years later, and condemned at Norfolk Assizes in 1578, as already mentioned. It is not likely that Eloye Mestrell would be brought from Norwich to London for his execution. We have, indeed, an instance of the converse practice in Holinshed, under date February 25, 1577—

> "John de Loy, a Frenchman, and five English gentlemen was conveied from the tower of London towards Norwich, there to be arreigned and executed for coining of monie counterfeite."

Possibly these prisoners were some of those against whom Eloye had informed.

However this may be, there is presumptive evidence that there were two Mestrells, one executed in 1569, the other in 1578. It is also possible that Philip was the father of Eloye, since in a letter of his already mentioned, pleading the poverty of his relations, he states that his mother, as well as his wife and family, were dependent upon him. His mother was therefore a widow, and had probably come over from France before the unfortunate end of her husband Philip. The custom of engraving continuing in families lends probability to this view. The names of the Oliviers, the Briots, the Simons, the Roettiers, the Pingos, the Wyons, and others readily occur in this connexion. It is not difficult, therefore, to suppose that both Mestrells were employed in the Mint, and that one of them was the engraver mentioned in

Ruding's list,[28] especially as the same form of the name, Menestrelle, occurs in the records of the time.

It may be added, as a sequel to the execution of Eloye Mestrell, that instructions were issued by the Privy Council, on the 19th of May, 1578, to Lord Darcy, to search the house of one Smithe at Harwich, who two years previously purchased "a presse and a stampe for dalers for ten pounds." It is not stated from whom the press was purchased, but it is not unlikely that Eloye Mestrell, who was tried for his offence in the neighbouring county of Norfolk, was the vendor.

We will now consider what machinery was employed at the Tower. So far as is known there is no specification extant of the tools introduced by Mestrell, but his improvements were probably confined to the cutting of the blanks perfectly round by means of a cutting-punch, and striking them with dies in some form of press or balancier. The employment of these two methods may be inferred from an examination of the coins themselves. With the exception of the half-sovereign, it will be found that the coins are not marked on the edges with letters or grainings.

As in France, so the coins struck by machinery in England at this period are referred to in contemporary writings as "mill-money." Shakespeare[29] and Ben Jonson,[30] as we know, speak of "mill-sixpences." The same term was also employed in the Mint itself, as we find from later testimony in the animadversions of the moneyers of the Commonwealth against Peter Blondeau when, with grim satisfaction, they reminded him of "what became of the Coyner that made mill-monie in Queen Elizabeth's time."[31] The modern phrase is the slightly modified one, "milled money," and is used in describing coins which are marked with letters or grainings on the edge. This is a signification which the term did not originally possess, but which it has acquired from the usage of modern numismatists. Evidence relating to the proper and the improper use of the word was brought before this Society many years since by Mr. E. J. Powell.[32] Without reviewing that evidence, it may be added here that the early history of machine-struck coins fully corroborates Mr. Powell's contention that milled coins are not necessarily such as are marked on the edge. As already stated, the new Mint in Paris, set up in 1551, was known as the *Monnaie du Moulin*, and it received this designation because the mill of the Italian lapidary was utilized to transmit the necessary power for driving the laminoirs. Horse-mills and water-mills were used for a similar purpose in the Tower Mint when coining machinery was installed on comparatively a large scale in the following century.

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[28] *Op. cit.*, i. 44.

[29] *Merry Wives of Windsor*, act i. scene 1.

[30] *Masques*, The Gypsies metamorphosed.

The coins issued from the new Mint in Paris, owing to their place of origin, were naturally referred to as mill-money, in distinction from those struck by ancient methods, which circulated side by side with them, but only a very few of the machine-struck pieces bore lettering or marking on the edges. When Mestrell came to London, his object was to show how this mill-money, so recently introduced into France, could be made in England, and it has already been noted that only the half-sovereign had any marking whatever on the edge. Whether or not he employed a mill, that is, mechanical means, for reducing strips of metal to an equable thickness before the blanks were cut out, it is difficult to determine. But, using the term "mill" in a loose way, numismatic authors from the time of Leake have credited Mestrell with introducing "the mill and the screw." Henfrey even goes so far as to use "mill" as a synonym for a coining-press. He says, "The coining-press or mill was known to Benvenuto Cellini in the 16th century." "In England the coining-press, or mill and screw, was introduced by a Frenchman named Mestrell, in the reign of Elizabeth."[33] But this usage of the words is in an erroneous sense. The screw, not the mill, was the coining-press.

It remains now to consider in what manner the edges of these pieces were produced. Kenyon states that the edges of many of the Elizabethan coins

> "were marked with straight lines, or 'milled,' probably by means of including the blanks in a collar so marked, slightly wider than themselves, to the size of which they would expand on being struck with the upper die, and which might be opened to take them out."[34]

The markings on the edge of the mill half-sovereign of Elizabeth can hardly be described as straight lines. The edge is serrated or corrugated in a manner roughly resembling the teeth of a cog-wheel, the indentations showing great irregularities. Such an edge could not have been produced by being struck in a *virole brisée*, as

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[31] *Answer of the Corporation of Moniers in the Mint, &c.*, 1653, p. 31.

[32] *Num. Chron.*, New Series, XIX. pp. 298–312 (1865).

[33] *Numismata Cromwelliana*, 1877, p. 65.

[34] *Gold Coins of England*, 1881, p. 127.

Kenyon suggests, nor in a plain collar. The marks, which are very coarsely executed, were no doubt placed on the metal blank before it was struck, by means of some form of knurling tool such as is used by jewellers and others. It may be added here that the pieces were too thin to receive lettering on the edges.

The silver pieces, so far as can be ascertained, had no graining on the edge. These, like the gold, are circular, but were struck without a collar. Had collars fitting the necks of the dies been used, the obverse and reverse impressions must of necessity have been produced centrally on the coins. It is rarely, however, that the beading which surrounds the inscriptions is perfectly reproduced throughout the circumferences of both obverse and reverse inscriptions. This proves beyond question that no mechanical appliance was in use which maintained the relative positions of dies and blank in accurate register at the moment of percussion.

A slight burr at right angles to the face of the coin is to be seen on some pieces, and this has been regarded by some as evidence that a collar was used. This burr, however, is similar to the one always caused on the blank when punched from the strip of metal, the burr always increasing as the tool becomes worn. It only occurs on one side of these coins, and by its position indicates where the coins, not being accurately placed, overlapped the dies. On the specimens of Mestrell's coins that I have examined, the burr is found either on the obverse or the reverse, but never on both, and, as might be expected under the conditions supposed, it is most pronounced on those coins that are struck badly out of centre.

Before passing to the next period, attention may be

drawn to another technical term. The word "edge," as applied to coins, is sometimes used in an ambiguous manner. In the foregoing remarks it has been applied only to the parallel sides of the cylinder of metal of which the obverse and reverse of the coin form the circular faces. While the edge of the mill-money is not always marked, there is invariably a strongly marked beading round the rims, that is, the perimeters of the two circular faces of the coins. This border of lenticular-shaped beads[35] was a new feature in coinage, and by its regularity round the rim, when properly executed, formed in itself a protection against clipping, which was a strong recommendation when the reform of the currency was so strongly desired.

[illegible]
of
[illegible]
[illegible]
milling
for
rim
beading

The improvement in appearance, due to this introduction of beading on the rim, can be seen by reference to Pl. VI., which includes illustrations both of a hammered and a mill half-sovereign [1, 2], and also of a hammered and a mill shilling [3, 4].

It is possible, therefore, that in describing the money of this period, some writers have not differentiated between the edge and the rim, and, when speaking of graining on the edge, meant to say beading on the rim. Leake draws some such distinction, but not with perfect clearness. He seems to call the part distinguished above as the rim the "flat edge," and the edge the "thick edge," the latter epithet being hardly suitable when 0·019 of an inch is the maximum thickness of the gold, and 0·035 of the silver coins (shilling), to which he refers. His words are—

---

[35] The circular dots placed round the rims in earlier reigns were more irregular and much smaller in comparison. An illustration showing an interesting series of the mill coins of England and France is included in the Earl of Pembroke's Plates, 1746, and is useful for purposes of comparison (p. 4, t. 31).

> "These [Sovereigns (*i.e.* Half-sovereigns)] were coined by the mill, having graining upon the flat edge; and there are some few Half and Quarter-Sovereigns [*i.e.* Quarter-Sovereigns and Half-crowns] of this sort, with graining both upon the flat and thick edge of the rim, being undoubtedly the first English money coined with the mill, or that had graining upon the rim."[36]

Snelling, before Leake, uses "flat edge" in the same sense. Speaking of Elizabeth's mill-money, he says they "had only a graining or grenelle on the flat edges, but no inscription."[37] When Hawkins describes the milled coins as having "their edges grained with various patterns, and are without inner circle,"[38] he is no doubt referring to the flat edges, like Snelling; but his expression is misleading as it stands.

(4) Briot, and his Methods of Coinage (1606–1646).

In the history of the application of machinery to the production of coins, the Briot period is a highly interesting one. Driven from France through the opposition of the *Cour des Monnaies*, he came to England about 1625, where he engraved dies and struck coins for Charles I. Subsequently he worked in the Scottish Mint.

The exact nature of Briot's alleged improvements in coining is not very clearly understood, and his methods deserve a more lengthy investigation than can be undertaken in this paper, which is already extended beyond anticipation.

Briot struck the Scottish Coronation Medal of Charles I with an inscribed edge, but his English coins do not bear letters or grainings on the edge, although, like Mestrell's, they have beading on the rims. The special consideration of his coins and the manner of their production can therefore be deferred without affecting the object of the present inquiry.

An example of Briot's work is shown [**Pl. VI. 5**]. This is a piedfort of Louis XIII, dated 1618, which has an inscription in relief on the edge, showing three sutures,

| + IVSTISSIMI · | · REGIS · | · PERENNITATI

(5) Re-establishment of Coinage by the Mill in France, and Blondeau's Methods in England (1645–1658).

The *Monnaie du Moulin* was transferred to the precincts of the Louvre Palace early in the seventeenth century, and became known in consequence as the *Balancier du Louvre*. Very little work was done until 1639, coins with inscribed edges having been struck at intervals, but chiefly by way of experiment. In this year the Mint was placed under the direction of Jean Varin, who was a skilful mechanician and a die-engraver. Under his superintendence the machines and tools were put into working order, and various medals, piedforts, and pattern coins were struck to demonstrate the superiority of the new process.

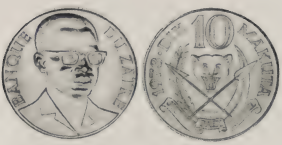
Through the influence of the Chancellor Seguier, a lover and patron of art, and one of the originators of

---

[36] *Historical Account of English Money*, 3rd ed., 1793, p. 217.

[37] *View of Pattern Pieces*, 1763, p. 49, note.

[38] *Silver Coins of England*, Kenyon's ed., 1887, p. 304.



Cupro-Nickel. Obverse: Portrait facing slightly to right. Legend around: BANQUE DU ZAIRE. Reverse: Arms in center with date and value above, 1973. DIX 10 MAKUTA. Diameter: 28mm. Weight: 8.5 gr. Edge: Reeded.

Acknowledgments

Austria, Mozambique: Dr. G. R. Gruber, Vaduz, Liechtenstein and Peter Last, New York.

German Federal Republic: John P. Gaug, APO, New York and Alfons Schneider, Ingolstadt, Germany.

Indonesia: Z. Vesely, Portland, Oregon; Ms. Janet Kerr, Messres; Raymond Lloyd, and V. H. Sutton of FAO Money Office, Rome, Italy.

Israel: Israel Government, Coins and Medals Corp. in New York.

Malawi: Paramount International Coin Corp., Englewood, Ohio.

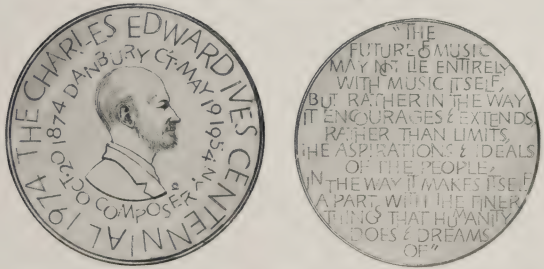
New Hebrides, Norway, Venezuela: Lauren Benson, Davenport, Iowa.

Rhodesia: Russell Rulau, Foreign Editor, Krause Publications, Iola, Wisconsin and Dennis Gill, Garden City, New York.

Photography: Krause Publications, Iola, Wisconsin.

Cataloguing: Assignments supplied by special arrangements with *Current Coins of the World*, published and copyrighted by Western Publishing Co., Whitman Publishing Div., Racine, Wis. Assignments not yet made if number is omitted.

CHARLES IVES CENTENNIAL MEDAL


THE CHARLES EDWARD IVES CENTENNIAL 1974
DANBURY CT · MAY 19 1954 N.Y.
OCT. 20 1874
COMPOSER
"THE FUTURE OF MUSIC MAY NOT LIE ENTIRELY WITH MUSIC ITSELF, BUT RATHER IN THE WAY IT ENCOURAGES & EXTENDS, RATHER THAN LIMITS, THE ASPIRATIONS & IDEALS OF THE PEOPLE, IN THE WAY IT MAKES ITSELF A PART WITH THE FINER THINGS THAT HUMANITY DOES & DREAMS OF"

Composer Charles Ives, 1874-1954, who is generally regarded as the father of modern music, was honored in the city of his birth, Danbury, Connecticut, on July 4th by a centennial concert and a commemorative collectors' medal issued in his memory.

The concert of Ives' distinctive works was conducted by Leonard Bernstein and Michael Tilson Thomas at the Danbury State Fairgrounds.

A substantial portion of the profit from the public sale of the medal will accrue to nonprofit Charles Ives Centennial, Inc.

Jean Dalrymple, president of Ives organization, persuaded her brother, artist and sculptor Ogden Dalrymple, to prepare a design and execute the models for the Ives medal.

The two inch medals will be struck in gold-on-silver (vermeil), fine silver (.999 fine) and bronze.

The vermeil Charles Ives or Pablo Casals, the latter being a similar medal produced earlier this year by the Medallic Art Company, are available for $50 each; in fine silver at $40 and in bronze at $10.Orders should be sent to Medallic Art Company, Old Ridgebury Road, Danbury, Connecticut 06810. Add 50¢ per medal ordered for postage and handling. Connecticut residents must add sales tax.

The Casals medal is available for immediate delivery, the Ives medal within six weeks.

DIFFERENCES OF OPINION AS TO THE "DIE STRESS DETECTION" ARTICLE IN THE NUMISMATIST, JUNE, 1974

by Eric P. Newman

Differences of opinion are healthy and natural in numismatic writing. There have been many articles published in the past which have been accepted as accurate and many which have been challenged. The correct facts and conclusions must always be the goal. No one should be discouraged from numismatic research and writing for fear of being criticized or for taking challengeable positions. Yet, no one should publish material without having made every reasonable attempt to check his statements and opinions with those who are able and willing to review the material. No numismatic editor or committee can be expected to verify every element in a numismatic submittal because much of the subject matter submitted is too specialized. Most editors are primarily seeking reader interest, educational value, clarity of expression and variety of subject matter.

The article in the June, 1974, *Numismatist* entitled "Die Stress Detection," written by Hal Birt, Jr. and Dick Wagner and carrying, "Winning a Battle in the War Against Cast Copies," brought on considerable disagreement. The fact that it stimulated substantial response indicates the large interest in forgery detection education. Virgil Hancock's reply is one of the opposition.

The assertions of Birt and Wagner were only intended to apply to the eighteenth century silver Spanish-American Pillar Dollars. The fine photographs of the flow patterns of the planchet metal in the raised areas near the border of the coins are sharp and convincing. These clearly show the results of metal moving out radially into the die depressions when a coin is struck with reasonable pressure. The same coin struck with somewhat greater pressure would hav resulted in all parts being solidly filled in where the die design is recessed and flow patterns would be minimal. Incomplete metal flow is a problem which has confronted coiners from the classical period into the nineteenth century.

Having demonstrated their point as to some genuine Pillar Dollars, Birt and Wagner indicated that cast forgeries do not show these flow patterns. This was generally true in the past because of the poor quality of much of the casting of counterfeits for circulation. However, as others have pointed out, modern techniques in casting pick up every detail to a high degree and will naturally pick up metal flow patterns along with every other part of the copied coin. The assertions of Birt and Wagner as to falsity therefore should be limited to routine counterfeits for circulation or for tourists and not to forgeries carefully produced for collectors.

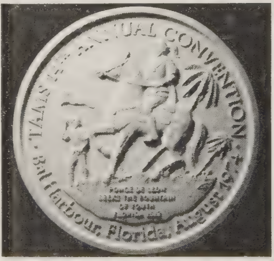
If we recognize that modern casting methods produce superb detail including flow patterns, then it is evident how dangerous any generalizations as to the detection of cast forgeries can become. In addition, reproductions struck from forged dies are not included or excluded by Birt and Wagner and this category of forgeries cannot be ignored when overall detection problems are considered as to a series of coins. The variation in the manufacture of genuine pieces and the variation in the manufacture of counterfeits and forgeries leaves the problem of detection very much subject to a piece by piece determination.

It is very important that numismatic terms be properly used in written presentations. The title "Die Stress Detection" could be construed to indicate that deformation of a die in the course of continued use is the cause of the flow pattern rather than the stress on the metal in the planchet caused by the pressure of coinage with dies. Footnote 4 of the Birt and Wagner article indicates that the authors want students of metallurgy to explain the reason for flow patterns caused by "die stress." This was a point which the authors might have investigated more thoroughly as much about it is known and it has not been neglected in numismatic literature.

Another problem in word meaning involved the use of the terms "edges" and "milled." Birt and Wagner stated that, "Edges, if milled, are a useful starting point for study." They also referred to "raised portions of the edge." The above quoted excerpts are intended to apply to the dentillated or ornamented border of the coin face rahter than to the decorated edge. Using the words edge and milled in the manner quoted is unfortunate but not unusual. The edge of a coin is not the border of the face of a coin. The words milled and milling in numismatics have become an inaccurate description of several different processes in coinage or the parts resulting from the use of one of those processes. The expression Spanish milled dollar, which became a commonly used phrase beginning in the eighteenth century, referred to striking this coin type in a screw press as compared to striking with a hammer. Prior to that the mill of the "mill and screw" coin production process referred to metal strips being thinned in a rolling mill before planchets were cut out for coinage in a screw press. Milling on the edge of a coin is the application of a design to or the upsetting of the edge of a planchet either by a Castaing machine or other mechanism and does not relate to striking. A coin, the edge of which receives a design from a collar die in the course of striking, is not milled. The border dentillation or ornamentation on the face of coins actually has no true relationship to the milling process even if the border of a die is prepared by the use of a nurl or mill (Spanish Pillar Dollar dies were not so prepared). The use of the word milled or milling are so subject to misinterpretation that they are better avoided unless very carefully explained when used.

1974

TOKEN AND MEDAL SOCIETY OFFICIAL MEETING MEDAL



The official 1974 meeting medal of the Token and Medal Society was recently issued at its 14th Annual Convention held in conjunction with the ANA convention in Bal Harbour, Florida. Sculptured by Vincent H. Miller of the Franklin Mint, the obverse of the issue offers a representation of the Spanish explorer, Juan Ponce de Leon; the reverse is the usual rendering of the official TAMS emblem, the same as all other annual issues produced since 1967.

Struck by The Franklin Mint, the medal was issued in three editions, all of the popular dollar size (39 mm), and in proof quality bronze, sterling silver and a special mint finish quality nickel version. The latter editions were made available only to TAMS members. The respective prices are: $3.50, $12 and $3 or $15 for the pair of bronze and silver.

Quantities struck were limited to the number ordered by TAMS members prior to July 26, 1974. An additional limited quantity may be offered to The Franklin Mint's "Special Commemorative Issues" program subscribers. Additional information can be obtained by writing Clifford Mishler, P. O. Box 316, Iola, WI 54945.

Museum Directions

by Arthur M. Fitts III, Acting Curator

This report is written to the accompaniment of the rip of a carpenter's saw, the hiss of a plumber's lead pot and the staccato of the stonemason's jackhammer. Much of the building is in turmoil as walls, doors, and interior windows come tumbling down. Library shelving has been temporarily relocated and even the bubbling fountain in the foyer of your Headquarters' no longer gurgles its welcome.

Construction for the museum expansion is underway!

While the existing museum facility is closed to the visiting public for the duration of construction, it is comforting to know that interest and support for it do not languish. Significantly, some who view the present facility recognize its short-comings as a numismatic museum. Particular gratitude is extended to Joel Malter who, while conducting his seminar class in the museum, recognized the inadequacy of our display facilities. A quick phone call to Joe Rose of Harmer Rooks Numismatists, Ltd. in New York resulted the following week in the shipment of twenty-four handsome exhibit cases to Colorado Springs. Each case is self-contained, specifically designed for the display of coins and medals and contains its own lighting, sound and security systems. We are most grateful to Joel Malter, Joe Rose and to Harmer Rooke for their very generous and thoughtful donation.

Did you know that in years' past, life members of the Association had annual dinner get-togethers? The first annual such dinner was held Sunday evening, August 24, 1947, at 9:30 p.m. in the Hotel Statler, Buffalo, New York. Could you identify any attendees of this dinner? Your archives could not answer these questions until Joseph Silverman, who attended these and other events of the 40's, forwarded the appropriate tickets and menu to us. Seemingly insignificant, this type of material is important as we try to assemble as complete a record of the Association's history as is possible. We gratefully acknowledge Mr. Silverman's thoughtfulness.

It is important that your museum house not only the good but also the bad. From time to time individuals including dealers send counterfeit and altered coins and paper money with the expressed interest of getting them off the market. This material covers not only United States, but virtually every other country of the world, and forms an important and valuable reference collection of phony material

[redacted]

DIFFERENCES OF OPINION AS TO THE "DIE STRESS DETECTION" ARTICLE IN THE JUNE 1974 NUMISMATIST

By

Eric P. Newman

Differences of opinion are healthy and natural in numismatic writing. There have been many articles published in the past which have been accepted as accurate and many which have been challenged. The correct facts and conclusions must always be the goal. No one should be discouraged from numismatic research and writing for fear of being criticized or for taking challengeable positions. Yet, no one should publish material without having made every reasonable attempt to check his statements and opinions with those who are able and willing to review the material. No numismatic editor or committee can be expected to verify every element in a numismatic submittal because much of the subject matter submitted is too specialized. Most editors are primarily seeking reader interest, educational value, clarity of expression, variety of subject matter, etc.

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Having demonstrated their point as to some genuine Pillar Dollars Birt and Wagner indicated that cast forgeries do not show these flow patterns. This was [redacted] generally true in the past because of the poor quality of much of the casting of counterfeits for circulation. However, as others have pointed out, [redacted] modern techniques in casting pick up every detail to a high degree and will naturally pick up metal flow patterns [redacted] along with every other part of the copied coin. The assertions of Birt and Wagner as to falsity therefore should be limited to routine counterfeits for circulation or for tourists and not to forgeries carefully produced for collectors.

If we recognize that modern casting methods produce superb detail including flow patterns, then it [redacted] is evident how [redacted] dangerous any generalizations as to the detection of cast forgeries can become. In addition, reproductions struck from forged dies are not included or excluded by Birt and Wagner and this category of forgeries cannot be ignored when overall detection problems are considered as to a series of coins. The variation in the manufacture of genuine pieces and the variation in the manufacture of counterfeits and forgeries leaves the problem of detection very much subject to a piece by piece determination.

It is very important that numismatic terms be properly used in written presentations. The title "Die Stress Detection" [redacted] could be construed to indicate that deformation of a die in the course of continued use is the cause of the flow pattern rather than the stress on the metal in the planchet caused by the pressure of coinage with dies. Footnote 4 of the Birt and Wagner article indicates that the authors want students of metallurgy to explain the reason for flow patterns caused by "die stress". This was a point which the authors might have investigated more thoroughly as much about it is known and it has not been neglected in numismatic literature.

Another problem in word meaning involved the use of the terms "edges" and "milled". Birt and Wagner stated that "Edges, if milled, are a useful starting point for study." They also [redacted] referred to "raised portions of the edge." The above quoted excerpts are intended to [redacted] apply to the dentillated or ornamented border of the coin face rather than to the decorated edge. Using the words edge and milled in the manner quoted is unfortunate but not unusual. The edge of a coin is not the border of the face of a coin. The words milled and milling in numismatics have become an inaccurate description of several different processes in coinage or the parts resulting from the use of one of [redacted] those processes. The expression Spanish milled dollar, which became a commonly used [redacted] phrase beginning in the eighteenth century, referred to striking this coin type in a screw press [redacted] as compared to striking with a hammer. Prior to that the mill of the "mill and screw" coin production process referred to metal strips being thinned in a rolling mill before planchets were cut out [redacted] for [redacted] coinage in a screw press. Milling on the edge of a coin is the application of a design to or the upsetting of the edge of a planchet either by a Castaing machine or other mechanism and does not relate to striking. A coin, the edge of which receives a design from a collar die in the course of striking, is not milled. The border dentillation or ornamentation on the face of coins actually has no true relationship to the milling process [redacted] even if the border of [redacted] a die is prepared by the use of a nurl or mill [redacted] (Spanish Pillar Dollar dies were not so prepared). The use of the word milled and milling are so subject to misinterpretation that they are better avoided unless very carefully explained when used.

Xerox sent to Harris

9-5-74

jh

(Tentative Draft)

DIFFERENCES OF OPINION AS TO THE "DIE STRESS DETECTION" ARTICLE
IN THE JUNE~~,~~ 1974 NUMISMATIST

By
Eric P. Newman

Differences of opinion are healthy and natural in numismatic writing. There have been many articles published in the past which have been ~~recognized~~ accepted ~~for their accuracy~~ as accurate and many which have been challenged. ~~because of speculation or erroneous logic.~~ The correct facts and conclusions must always be the goal. ~~and who is right and who is wrong should be only an incident~~ [illegible] No one should be discouraged from numismatic research and writing for fear of being criticized or for taking ~~sincerely reaching erroneous conclusions.~~ challengeable positions. Yet, no one should publish material without having made every reasonable attempt to check his ~~data and conclusions~~ statements and opinions with those who are able and willing to ~~assist~~ review the material. No numismatic editor or committee can be expected to verify every element in a numismatic submittal ~~for accuracy. As~~ because much of the subject matter submitted is too specialized. ~~Many~~ Most editors are primarily seeking reader interest, educational value, clarity of expression, variety of ~~material~~ subject matter, etc.

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~~Incomplete Metal Flow~~
~~Flow Incomplete~~ metal flow is a ~~condition~~ problem

~~This is a problem~~ which has confronted coiners ~~since~~ from the classical period. into the nineteenth century.

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~~clearly~~ show ~~While~~ This may be

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in the past ~~generally~~ poor of counterfeits for circulation.

generally true because of the ~~pure~~ quality of much of the casting ~~in the past. This~~
~~applies to many counterfeits made in the past and to many forgeries made in recent years.~~ to circulate

No Ꭶ fine up ~~lot~~ to a high degree

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~~explained~~ in numismatic literature.

Burt and Wagner

~~It was~~ also stated that "Edges, if milled, are a useful starting

? point for study." The Pillar Dollar has a milled edge rolled onto the planchet by a

Castaing machine before the faces of the coin are struck. The quoted sentence was intended to

of the coin face rather than

refer to the border ~~instead of~~ the edge and to the border beading or dentillation.
This ~~again~~ is ~~word usage~~ which should not be left subject to misinterpretation.

modern produce superb detail

If we recognize that casting methods ~~are quite superior and will~~ ~~with results~~

will become evident how difficult generalizations

ddition,

1971

JOINT ANNUAL MEETING OF
STOCKHOLDERS AND DIRECTORS

A joint annual meeting of the stockholders and directors of the corporation was duly called and held at 400 Washington Avenue, St. Louis, Missouri, on May 3, 1971. All of the stockholders and directors were present. Mr. Bernard A. Edison acted as Chairman of the meeting and Mr. Eric P. Newman acted as Secretary thereof.

The following individuals were unanimously elected directors and officers to serve for the current year and until their successors are duly elected and qualify:

Bernard A. Edison	Director and President
Charles B. Edison	Director and Vice-President
Julian I. Edison	Director and Vice-President
Simon Edison	Vice-President
Samuel B. Edison	Vice-President
Irving Edison	Vice-President
Morgan I. Pitcher	Vice-President and Treasurer
Raymond T. Gusnard	Vice-President
Joseph Metzler	Vice-President
Eric P. Newman	Vice-President and Secretary

On motion duly made, seconded and unanimously carried it was

> RESOLVED, that all action taken at any informal meeting of the Board of Directors heretofore held is hereby ratified and approved.

There being no further business, on motion, the meeting adjourned.

Eric P. Newman
Secretary of the meeting